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brought the whole force of workmen to the rescue, otherwise he would certainly have made way with one or more; for Esquimaux dogs in almost any number, are no match for a northern wolf.

Of the other breeds of dogs which are used as draught animals in the north, I have already mentioned the large dogs of the Hudson Bay Company's traders, which are known to me only by description. The Indian dogs appear, for the most part, like a very degraded variety derived from the wolf. A peculiar variety, of unknown origin, but probably from Europe or Siberia, was used to some extent by the Russians. In appearance it resembles the shepherd dog, but stands as high as a Newfoundlander. Its shape is slenderer than that of the native breed, and the hair is shorter, the colors are usually black or dark brown and white or tan, with a yellow spot over each eye, as in some of the terriers. They appear to be quite as hardy and serviceable as the native variety. I have known a team composed chiefly of dogs of this breed to travel with a light load over a well marked track, between sixty and seventy miles in a single day.

OUR COMMON FRESH-WATER SHELLS.

BY E. S. MORSE.

IN this and a few succeeding papers we intend to give a brief outline of several groups of fresh-water mollusks common to the United States.

The intention is to make them useful to the young collector in enabling him to determine the generic names of the more common shells he may have in his collections, and to give him some idea of their habits and structure. He will also become acquainted with the specific names of the more common shells he meets with. Nothing more than a brief

Fig. 2.

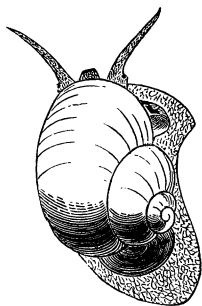


Fig. 1.

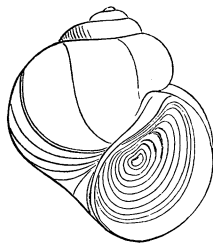


Fig. 3.

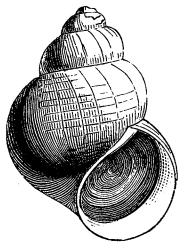


Fig. 6.



Fig. 9.



Fig. 8.

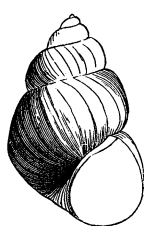


Fig. 5.

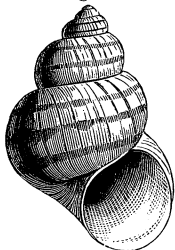


Fig. 4.

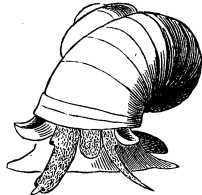


Fig. 10.



Fig. 7.



Fig. 11.



Fig. 16.

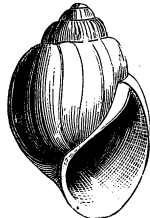


Fig. 12.

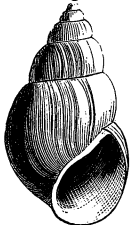


Fig. 13.



Fig. 14.



Fig. 15.



Fig. 18.



Fig. 17.



Fig. 20.

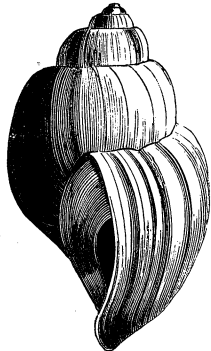


Fig. 22.

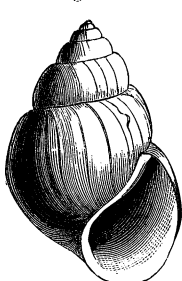


Fig. 21.

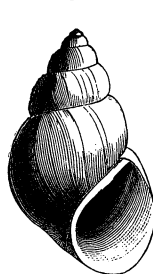
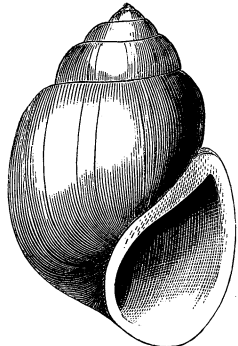


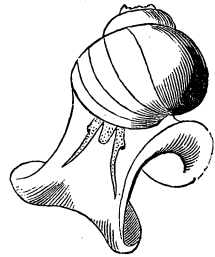
Fig. 19.



sketch will be attempted. In one sense the papers will be a compilation from the treatises of Prime, Binney, Bland, and others, published by the Smithsonian Institution, through whose liberality we are enabled to illustrate this and the papers which are to follow.

A shell common in most of the streams and ponds of New England, a figure of which is here given, Fig. 78, belongs to a group of mollusks that is distributed throughout the northern hemisphere. They are usually found in muddy streams or ponds, either grovelling an inch or so in the mud or among roots, or crawling along over the sand.

Fig. 78.



The creeping disk is quite long and broad. The little snout, on each side of which may be seen the tentacles, with eyes at their bases, projects beyond the margin of the shell in front, while behind the shell, and attached to the upper part of the tail may be seen a semi-circular corneous plate called the operculum, Fig. 79. In Pl. 9, fig. 2, another species is represented in the attitude of crawling, showing the position of the operculum. When the animal retires within its shell the head and forward part of the foot disappears first, followed by the tail with the operculum, which answers as a lid, or door to close the aperture of the shell. In Figs. 1 and 3 of the plate, the appearance of the operculum is shown within the aperture of the shell. As the shell increases in size, by the addition of tiny particles around the margin of the aperture, the operculum increases likewise by the addition of the corneous substance around its margin, and the little concentric furrows seen in the figure of the operculum indicate its successive rates of increase. Most marine Gasteropods (the name of the class to which all those mollusks belong that have a broad creeping disk) are furnished

Fig. 79.



with opercula, though they vary greatly in composition and shape. Some are strengthened by the addition of lime, and are quite solid; of this kind is the eye tone, so called; some are claw-shaped, circular, or very irregular in form. In most species the operculum fits the aperture of the shell very closely; in others the operculum is rudimentary. In *Strombus*, or the conch-shell, it is long and sharp, projecting some way beyond that portion of the foot to which it is attached, and the animal uses it by thrusting it into the sand, and then by a quick muscular contraction throwing its whole body forward. While most mollusks lay eggs, some in a glairy mass, as in the air-breathing water snails, or in a series of pods like the whelk, the group of which we are now treating, bring forth the young alive, but the young are simply hatched from the egg, before the egg leaves the parent; hence they are called ovoviviparous. On breaking open the shell of a female in spring time, the young ones may be found of various sizes within their globular eggs.

The species figured above, and also in Pl. 9, fig. 11, is now known as *Melantho decisa*, and is the only species found in New England. The shell is quite solid, having four or five whorls; though the first two whorls, forming the tip of the shell, is always absent from erosion. In young specimens a perfect one may be found; but adult shells are always imperfect, as shown in the figure. The color of the shell varies in being a light or dark green, and shiny. Within the aperture the shell is bluish white.

Those who have the first volume of this magazine will recall the description there given of the tongue of a land snail, in which it was stated that the floor of the snail's mouth was lined by a membrane covered with many rows of minute spurs, or teeth, and that the snail used this tongue in rasping its food. Now these minute teeth furnish admirable characters in the classification of these minor groups of mollusks. Thus the air breathing snails which have no operculum have the tongue lined with rows of very nu-

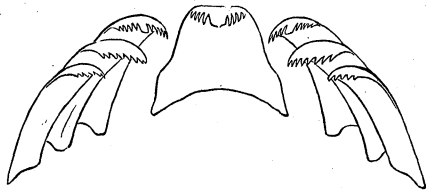
merous teeth; while those air breathing snails which have an operculum usually have a long slender tongue and have only seven teeth in a row, and in this feature they resemble the group now under consideration. Fig. 80 represents one row of teeth taken from *Melantho decisa*. This species contains about forty rows of teeth, and as these teeth always hook backward they act admirably as a rasp in licking up their food. The members of this family found in the United States represent four well marked genera containing about twenty species. The two principal ones are *Vivipara* and *Melantho*. In *Vivipara* the shell is generally thinner, more globose, the lingual teeth are always strongly notched; see Fig. 81. (Compare this with the teeth of *Melantho decisa*, Fig. 80). The disk of the animal does not project beyond the snout. See Plate 9, fig. 2. It will be noticed that there are two distinct folds, one on each side of the aperture of the shell, and these form regular conduits for the water to enter and bathe the gills for respiration; the water entering by the right opening, and finding egress by the left one.

Fig. 80.



(See Plate 9, fig. 4). In *Melantho* the shell is not so globose, but is more solid, and the lingual teeth are smooth, or only slightly serrated.

Fig. 81.



The foot also projects far beyond the snout, as in the figure of *Melantho decisa*, and the folds which conduct the water to the gills do not form regular tubular conduits as in *Vivipara*. We will now mention briefly the more prominent species, figures of which will be found in the plate.

Vivipara intertexta Say, Plate 9, figs. 2, 3, 4, has a very globose shell, yellowish green or brownish horn color, having numerous nearly obsolete revolving lines. The species has been found in Louisiana, South Carolina and Iowa. Vi-

vipara subpurpura Say, Plate 9, fig. 8, has an oblong, subovate shell, olivaceous in color, with a tinge of purple. Figs. 9 and 10 represent younger specimens. Mr. Binney says he has traced this species from Texas through Louisiana and Mississippi to Key West, Fla., and in the Western States of Indiana, Wisconsin, and Missouri.

V. contectoides W. G. Binney, Pl. 9, figs. 5, adult; 6 and 7, young. The shell of this species is ornamented with four revolving bands, is quite smooth and shiny, and the umbilicus is open. The shell closely resembles a common European species. Found in nearly all the Southern and Western States.

Vivipara Georgiana Lea, Plate 9, figs. 1 and 15, operculum. This species inhabits Florida, Georgia, South Carolina and Alabama. There are

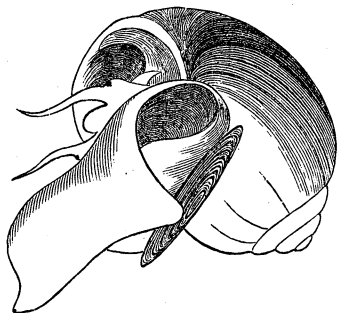


Fig. 82.

other species of this genus in the United States, but it was our intention to mention only those that were more characteristic.

Of *Melantho* we have several well marked species, among which *Melantho ponderosa* Say (Plate 9, figs. 14 and 16, young; figs. 19 and 20, adult),

is the largest. It is a heavy solid shell an inch and a half in length, greenish horn color. It has been found in Ohio, Indiana, Illinois, Michigan, Tennessee and Alabama. Fig. 82 shows the shell with the animal extended. The creeping disk is bent upon itself. The operculum may be seen on the hinder portion of the body, and the tentacles and eyes are seen near the aperture of the shell.

Melantho decisa Say, Plate 9, fig. 11, represents the species common to the New England States. Some specimens are very smooth and bright green in color. They are all devoid of an apex, and this is a characteristic feature. Sometimes the shell is found reversed; that is, the spire twists the other way.

Melantho integra Say, Plate 9, figs. 17, 18, 21 and 22. This shell is abundant in the Western States. Mr. Binney is inclined, from an examination of a large number of specimens, to believe that it is the same species as the one just mentioned, and he may be right, but the weight of authority is against him. The differences between the male shell, Fig. 22, and the female shell, Fig. 21, are quite marked.

Melantho coarctata Lea, Plate 9, figs. 12 and 13, occurs in South Carolina, Alabama, Mississippi and Arkansas. There are other species of this genus in the United States, but it was our intention to enumerate only the more prominent species of each genus presented. It would be of the highest interest for the collector to diligently seek for specimens of this group from all localities, and compare them to see where the lines may be drawn between the species. We suggest this, since there is so much variance of opinion between writers on this subject. Mr. Binney to whom we are much indebted for the work which has been so generously published by the Smithsonian Institution, has brought together a vast amount of material, and while he may have been too conservative, we prefer this, to the lamentable practice of many, in describing from a single specimen. In the specimens mentioned above we have relied on the accuracy of the figures in identifying the species, and for this reason the descriptions are either brief or wholly wanting.

THE VIRGINIA PARTRIDGE.

BY AUGUSTUS FOWLER.

THE *Ortyx Virginianus* is a resident bird, and was more common in former years than at the present time. Thirty years ago a covey of from five to thirty of them could be flushed on almost any farm in Essex County. Now one of